ITU-T & Related U.S. Standards Development

Outputs

- Leadership of ITU-T and related U.S. telecommunications standards committees.
- Technical contributions presenting U.S. standards proposals and ITS research results.
- Proposed ITU Recommendations and associated U.S. industry standards.

The Institute has a long and distinguished history of leadership, technical contributions, and advocacy of U.S. Government and industry proposals in international and related national telecommunication standards committees. These activities are focused in the International Telecommunication Union (ITU) — the United Nations-affiliated standards organization responsible for the cooperative planning and interoperation of public telecommunication systems and services worldwide. The ITU's Telecommunication Standardization Sector (ITU-T) develops international standards (Recommendations) addressing technical, operating, and tariff questions relating to all aspects of wireline telecommunications. ITU-T Recommendations have a strong impact on both the evolution of U.S. telecommunications infrastructures and the competitiveness of U.S. telecommunications products in international trade.

ITS has played a strong role in ITU-T standardization work for many years. The Institute's long-term goal there (and in related national standards work) is to motivate standardization of user-oriented, technology-independent, end-to-end measures of telecommunication Quality of Service (QoS) — and to relate those end-to-end measures with the technology-specific performance metrics service providers use to provision and operate their networks. This standardization activity promotes fair competition and technology innovation among equipment and service providers, facilitates interworking among independently-operated networks and dissimilar technologies, and gives users a quantitative, practical means of defining their telecommunication requirements and selecting products and services that meet them.

In FY 2004, the Institute provided leadership in two key ITU-T groups: Study Group 13 Working Party 4 (Network Performance and Resource Management) and Study Group 9's Working Group on Quality Assessment. Study Group 13 develops international standards (Recommendations) addressing Optical Transport Network (OTN), Multi-Protocol Label Switching (MPLS), Ethernet, and IP-based technologies, all of which are expected to play an important role in the realization of multi-service Next-Generation Networks (NGNs). SG 13/WP 4 develops international standards on network performance and resource management for all of the NGN core technologies. SG 9's Working Group on Quality Assessment defines quality objectives for integrated broadband cable networks and television and sound transmission. Within that group ITS chairs Question 21/9, "Objective and Subjective Methods for Evaluating Audiovisual Quality in Multimedia Services." ITS also provides leadership and technical contributions in the ITU affiliated Video Quality Experts Group (VQEG) and the Alliance for Telecommunications Industry Solutions (ATIS) Network Performance, Reliability and Quality of Service Committee (PRQC), formerly T1A1. VQEG works in conjunction with ITU-T SGs 9 and 12 and ITU-R WP6Q (Broadcasting Services — Performance Assessment and Quality Control) to develop objective, computer implementable, perception-based video quality metrics (VQMs) that emulate the human visual system. PRQC develops national standards and contributes strongly to ITU-T in all of these technology areas.

During FY 2004, the Institute's SG 13 leadership contributed to the completion and approval of eight ITU-T Recommendations, providing new specifications on OTN performance, IP network traffic and congestion control, MPLS network performance, IP network call processing, and other topics of importance to NGN. ITS presented key results of this work in an ITU-T workshop session, "Specification and Signaling of IP QoS Classes," summarized at http://www.itu.int/ITU-T/worksem/qos/program.html. ITS also provided technical leadership supporting U.S. Government and industry preparation for the World Telecommunication Standardization Assembly (WTSA), a quadrennial meeting at which the ITU-T Member States determine the objectives, structure, work methods, and senior leadership of ITU-T for the following 4-year Study Period. ITS participated in the formation and technical

management of the ITU-T NGN Focus Group, a transitional standards organization established by the ITU-T Director to accelerate NGN standardization work during the "interregnum" period surrounding the WTSA. As input to the WTSA, ITS developed a summary Recommendation that concisely defines the scope, application, and interrelationships among the over 30 performance Recommendations developed by SG 13/WP 4. The Institute also contributed strongly to the development of a key U.S Government contribution to WTSA, proposing the creation of a new NGN Study Group for the 2005-2008 Study Period. Industry leaders believe NGN standardization will be very important in defining new network technologies capable of fully integrating today's wired telephony, video, wireless, and Internet infrastructures and services — and motivating the capital investment needed to deploy them.

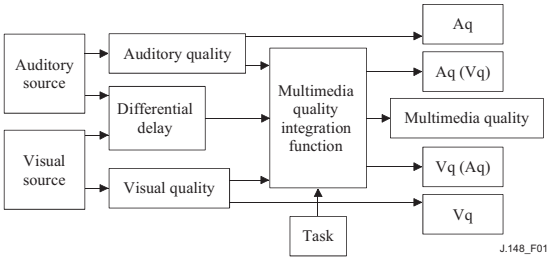
ITS leadership in PRQC contributed to the completion and approval of five new ATIS specifications on network reliability performance and emergency telecommunications service (ETS), two new ATIS specifications on video communication quality, and numerous U.S. contributions to ITU-T on related topics. The new ATIS specifications address U.S. industry needs and advance key goals of both the DoC and the Department of Homeland Security. The Institute's technical contributions to PRQC included contributions on QoS specification, QoS interoperability, and IP network QoS signaling. One contribution of particular import identified interoperability issues and evaluated possible mapping solutions for QoS interworking between wireless and wireline IP networks. ITS participated with other leaders in implementing a major reorganization of the ATIS standards committees, contributing to a more product-driven ATIS standards management regime and elevating the former Committee T1 Technical Subcommittees to independent standards development organizations. ITS helped shape the technical objectives for a newly-formed ATIS NGN Focus Group, promoting coordination of U.S. NGN standardization efforts with ongoing ITU-T work.

ITS has co-chaired the ITU Video Quality Experts Group since its formation in 1997. VQEG enables video experts from many countries to collaborate in developing and evaluating video quality metrics, and its results strongly impact the standardization of VQMs in both ITU-T and ITU-R. The group works primarily via an e-mail reflector, publicly accessible at http://www.VQEG.org. During FY 2004 the number of participants subscribed to this reflector grew to 380. ITS chaired two physical meetings and several conference call meetings in FY 2004.

During FY 2004, ITU-T and ITU-R approved several Recommendations based on work supported by ITS. Most noteworthy are ITU-T Recommendation J.149, "Methodological Framework for Specifying Accuracy and Cross-Calibration of Video Quality Metrics (VQM)," and ITU-T Recommendation J.144 Revised, "Objective Perceptual Video Quality Measurement Techniques for Digital Cable Television in the Presence of a Full Reference."

J.144 Revised was the result of a multi-year VQEG effort to evaluate "full reference" VQMs for assessing standard definition television. During FY 2004, VQEG undertook a complementary "reduced reference" validation test for standard definition television, to be completed in FY 2005. VQEG also launched a major new initiative in the area of multimedia quality assessment. ITS leadership was instrumental in forming the Joint Rapporteur Group on Multimedia Quality Assessment (JRG-MMQA), a cross-cutting ITU-T standards body that will unite the video quality expertise of SG 9 with the audio quality expertise of SG 12 in a cooperative effort to develop objective, perception-based metrics for combined audio and video in mobile and PC environments. This group is co-chaired by ITS.

The figure below (from Recommendation J.148) illustrates the basic components of a multimedia quality assessment model.



Basic components of a multimedia quality assessment model.

Recent Publication

A. Webster, Ed., "ITU-T Tutorial on Objective Perceptual Assessment of Video Quality: Full Reference Television," 2004.

For more information, contact:
Neal B. Seitz
(303) 497-3106
e-mail nseitz@its.bldrdoc.gov